



Hacker Industries, Inc.

1. Product Name

- Hacker Floor Underlayments
- FIRM-FILL® Gypsum Concrete
- FIRM-FILL® 2010
- FIRM-FILL® 3310
- FIRM-FILL® High Strength
- FIRM-FILL® 4010
- FIRM-FILL® CMD
- GYP-SPAN® Radiant
- Hacker Sound Mat II
- FIRM-FILL® SCM
- Hacker Floor Primer
- Hacker Floor Sealer
- Hacker TopCoat™ SP

**Note: For cementitious applications, consult TRUE-SCREED® CLU Spec Data Sheet.*

2. Supplier

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3. Product Description

BASIC USE

Hacker Floor Underlayments (HFU) are lightweight, high-strength, durable, non-structural cementitious underlayments for use in multi-family, residential, commercial, and radiant heating projects for both new construction and renovation. Trained, Licensed Applicators can install up to 40,000 sq. ft. (3716 m²) per day. The finished products provide a superior crack-resistant surface that is integral to a fire and sound rated system.

Since 1983, Hacker Industries, Inc. has provided the most cost effective and high strength underlayments in the industry. With the proven performance of over 2 billion sq. ft. installed nationwide, HFU are appropriate for use over concrete, wood, steel deck, or radiant substrates. With proper preparation, virtually any type of finished floor covering can be installed over HFU. All HFU meet ASTM F2419. (See Technical Data).

COMPOSITION & MATERIALS

FIRM-FILL® Gypsum Concretes and GYP-

SPAN® Radiant are mixed with washed plaster or masonry sand, per ASTM E11, and potable water to form HFU.

TYPES

- **FIRM-FILL® Gypsum Concrete** Designed for use in multi-family housing to attain sound and fire ratings. 1200-2000 psi (8.3-13.8 MPa).
- **FIRM-FILL® 2010** Additional surface hardness and higher compressive strength. 1950-2750 psi (11-17.2 MPa).
- **FIRM-FILL® 3310** An exceptionally smooth, rock-solid, surface over wood subfloors. 2000-3300 psi (13.8-22.8 MPa).
- **FIRM-FILL® High Strength** For resurfacing damaged, uneven or cracked concrete floors and planks. 2500-3800 psi (17.2-26.2 MPa).
- **FIRM-FILL® 4010** Offers superior bonding capabilities for thin capping of concrete floors. 4000-5000 psi (27.5-34.4 MPa).
- **FIRM-FILL® CMD** For cold-formed steel frame construction with a corrugated steel deck. Min. 3500 psi (24.1 MPa).
- **GYP-SPAN® Radiant** Designed for use with radiant heat systems; enhanced thermal mass and heat transfer. 2000-3200 psi (13.8-22.1 MPa).
- **Hacker Sound Mat II** Sound control mat; composed of recycled rubber; increases STC and IIC ratings.
- **FIRM-FILL® SCM** - Thinner (3mm) dimensional acoustical control mat.

APPLICATION THICKNESS

Minimum application thickness of HFU is:

- Over wood – 3/4" (19mm) of HFU.
- Over concrete slabs – HFU may be feather edged in transition areas.
- Over radiant heat tubes – Minimum 3/4" (19mm) on top of radiant tubes.
- Over Sound Control Mats - See Supplier recommendations for thickness.
- Maximum thickness – 3-1/2" (89mm).
- Over corrugated steel deck - 1" (25mm) over top of flutes.

LIMITATIONS

- Do not use HFU in exterior locations.
- HFU require a finished floor covering.
- Gypsum based systems shall not be used below grade, or where prolonged exposure to moisture is likely.
- Subfloor must support design loads with maximum L/360 deflection.
- HFU above crawl spaces must be protected by a vapor barrier.

- Do not apply less than 1-1/2" (38mm) of HFU on plastic vapor barrier.
- HFU are but one component of an effective sound and fire control system. Care must be taken in the installation of all components to assure the ultimate design performance. Published acoustical and fire system tests were conducted under controlled laboratory or field conditions and reflect results applicable only to those specific assemblies.

4. Technical Data

APPLICABLE STANDARDS

- ASTM F2419 Standard Practice for Installation of Thick Poured Gypsum Concrete Underlayments and the Preparation of the Surface to Receive Resilient Flooring
- ASTM C472 Modified Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete
- ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials

2009 Tile Council of North America Handbook - Installation Methods F180, F200, RH111, and RH122.

WEIGHT

- FIRM-FILL Gypsum Concrete – 3/4" (19 mm) thickness weighs 7 psf (34.2 kg/m²)
- FIRM-FILL 2010 – 3/4" (19mm) thickness weighs 7.2 psf (35.2 kg/m²)
- FIRM-FILL 3310 – 3/4" (19mm) thickness weighs 7.6 psf (37.1 kg/m²)
- FIRM-FILL High Strength – 3/4" (19 mm) thickness weighs 7.7 psf (37.6 kg/m²)
- FIRM-FILL 4010 - 1/2" (12mm) thickness weighs 5.3 psf (25.8 kg/m²)
- GYP-SPAN Radiant – 1-1/2" (38mm) thickness weighs 14.6 psf (71.3 kg/m²)

DENSITY

107 - 130 pcf (1682 - 2082 kg/m³) minimum dry density

APPROVALS

- ICC-ES Legacy Report ER-4147
- City of Los Angeles RR No. 24540
- U.S. Department of Housing and Urban Development FHA-HUD-1255

FIRE PERFORMANCE

HFU are included in 88 UL listings: G565, G568, J917, J919, J920, J924, J927, J931, J957, J966, J991, J994, K906, L001, L004, L005, L006, L201, L202, L206, L208, L209, L210, L211, L212, L501, L502, L503,

Hacker Industries, Inc.

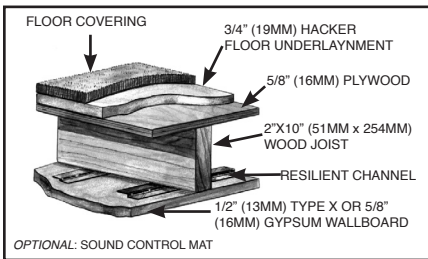


Figure 1: Wood System

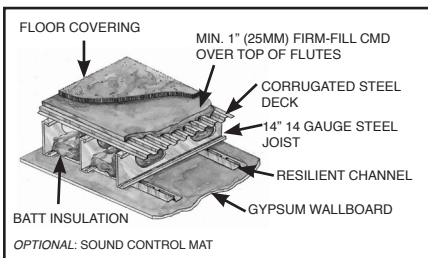


Figure 2: Corrugated Steel Deck

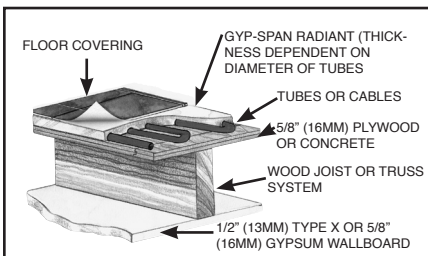


Figure 3: Radiant Heat System

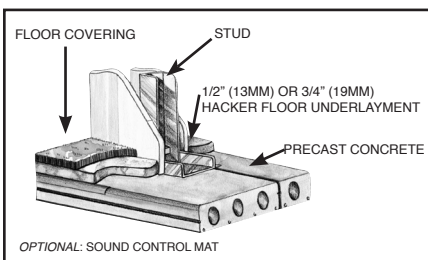


Figure 4: Concrete System

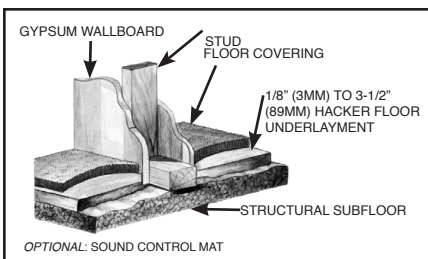


Figure 5: Renovation

L504, L505, L506, L507, L508, L509, L510, L511, L512, L513, L514, L515, L516, L517, L518, L519, L520, L521, L522, L523, L524, L525, L526, L527, L528, L529, L530, L532, L533, L534, L535, L536, L537, L538, L539, L540, L541, L542, L543, L544, L545, L546, L547, L548, L549, L550, L551, L552, L553, L555, L556, L557, L558, L559, L560, L562, L563, L571, L585, L598.

Canada: L512, M505, M506, M507, M508, M509, M518.

FIRE HAZARD CLASSIFICATION
ASTM E84: Flamespread Index, 0; Fuel Contribution, 0; Smoke Density, 0.

ACOUSTICAL PERFORMANCE
HFU contribute to superior STC (Sound Transmission Class) and IIC (Impact Insulation Class) ratings. Additional sound reduction is achieved using a sound control mat with HFU.

5. Installation
SITE CONDITIONS

HFU shall be delivered in original, unopened bags, stored away from exposure to elements, and above 50°F (10°C). Do not allow bags to get wet. Do not use beyond shelf life.

Building temperature shall be maintained above 50°F (10°C) before, during, and after installation until the subfloor, ambient temperature, and humidity have stabilized and material has completely dried.

PREPARATION

General Contractor shall confirm the subfloor is structurally sound and conditions are suitable for installation of floor underlayment. Subfloor must be dry, broom cleaned, and completely free of oil, grease, paraffin, wax, laitance and other contaminants. Subfloor shall be tested for moisture before the installation of HFU.

APPLICATION

Prior to installation of HFU, the building must be enclosed including roof, windows, and doors. Install HFU after radiant heat tubing has been put in place. Provide constant ventilation to remove moisture from the area until the underlayment is completely dry. If necessary, the General Contractor shall provide mechanical heat.

The following tests shall be performed in conjunction with the installation of HFU:

Field Samples: Perform psi tests in strict

accordance with ASTM C472 modified using 2" (51mm) split brass molds.

Slump Test: Test for slump as HFU are being installed using a 2" by 4" cylinder and plexiglass. The patty size shall be as stated by Hacker Industries, Inc.'s current literature.

Dryness Test: Prior to the installation of finished floor goods, Hacker Industries, Inc. recommends that a moisture test be done. Consult floor covering manufacturer for recommended procedures to test for dryness and acceptable moisture levels. Calcium Chloride is not an approved method. To avoid potential problems during the drying process, the General Contractor shall consult Hacker Industries, Inc.'s Drying Conditions Flyer and information contained on Hacker Industries, Inc.'s website for additional information concerning drying of this product.

PROTECTION

During construction, General Contractor shall place temporary wood planking in areas subject to wheeled or concentrated loads.

BUILDING CODES

Installation of HFU must comply with applicable local, state, and national code requirements.

6. Availability & Cost

HFU are only installed by Licensed Applicators. Contact Hacker Industries, Inc. for the applicator(s) in your area.

7. Warranty

HACKER INDUSTRIES, INC. WARRANTS HFU TO BE FREE FROM MANUFACTURING DEFECTS, AND WHEN PROPERLY PREPARED AND INSTALLED ACCORDING TO APPROVED SPECIFIED METHODS, HFU WILL ATTAIN MINIMUM PHYSICAL SPECIFICATIONS AS STATED BY HACKER INDUSTRIES, INC.'S MOST RECENT LITERATURE. HACKER INDUSTRIES, INC.'S OBLIGATION SHALL BE LIMITED TO THE REPLACEMENT OF THE BAGGED PRODUCT ONLY AND IS SUBJECT TO NOTICE AND INSPECTION REQUIREMENTS. *THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND ALL OTHER OBLIGATIONS OR LIABILITIES.*

For Hacker Industries, Inc.'s BIM models and details, visit www.HackerIndustries.com or www.CADdetails.com.